REMARKS

This application has been carefully reviewed in light of the Office Action dated February 26, 2003. Claims 1 to 39 are in the application, of which Claims 1, 4 to 6, 21, 24 to 26 and 32 to 39 are the independent claims. Claims 1, 4 to 6, 21 and 24 to 26 have been amended and Claims 32 to 39 are new. Reconsideration and further examination are respectfully requested.

In the Office Action, Claims 1 to 31 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 6,219,015 (Bloom) in view of U.S. Patent No. 6,456,748 (Yushiya). The rejection is respectfully traversed, for the reason that the applied art is not seen to disclose or fairly suggest at least the feature of a space modulator which is illuminated with light beams of different colors in a time sequentially switching manner, as explained in greater detail below.

The present invention generally concerns displaying of images, where incident light is modulated by a space modulation means according to input display data, and output. A plurality of light beams having different colors are generated, and are illuminated onto the space modulation means. Light emitted from the space modulation means is projected upon an image display screen.

Referring specifically to the claims, independent Claims 1, 4 to 6, and 32 to 35 define an image display apparatus including a space modulation means for modulating incident light according to input display data and outputting the modulated incidence light, an illumination means for generating a plurality of light beams having different colors and time sequentially switching the generated light beams and illuminating the space

modulation means with the light beam, and a projection means for projecting light emitted from said space modulation means upon an image display screen.

Independent Claims 1 and 32 define a white light illumination period which is provided for said illumination means per each interval between illumination periods for the plurality of light beams having different colors.

Independent Claims 4 and 33 define an illumination means which has a white light illumination period having a length corresponding to an illumination light transition period provided per each interval between illumination periods for the plurality of light beams having different colors, and the space modulation means repeats modulation twice during a signal period overlapping the white light illumination period, by using a same modulated signal for a white light gradation display having a length corresponding to an illumination light transition period to thereby set the signal period having a length twice the illumination light transition period.

Independent Claims 5 and 34 define an illumination means which has a plurality of groups each having at least each of three boundary period between red and green, green and blue, and blue and red, respectively of illumination periods of the three primary colors, of the plurality of groups, at least one group is supplied with a signal different from signals supplied to other groups, and a same group is applied with a same signal during each of the three boundary period between red and green, green and blue, and blue and red.

Independent Claims 6 and 35 define an illumination means which has a plurality of groups each having at least each of three boundary period between red and green, green and blue, and blue and red, respectively of illumination periods of the three

primary colors, and the plurality of groups includes a first group having a white light illumination period having a length corresponding to an illumination light transition period during each boundary period and a second group without the white light illumination period during each boundary period.

Independent Claims 21, 24 to 26 and 36 to 39 define an image display method of generating a plurality of light beams having different colors, time sequentially switching the generated light beams, illuminating a space modulation means with the light beam, and projecting light modulated by and output from the space modulation means upon an image display screen, where the light modulated by the space modulation means is modulated according to input display data.

Independent Claims 21 and 36 define a white light illumination period which is provided in each period between illumination periods for the plurality of light beams having different colors.

Independent Claims 24 and 37 define a white light illumination period having a length corresponding to an illumination light transition period provided in each period between illumination periods for the plurality of light beams having different colors, and an operation of the space modulation means overlaps the white light illumination period by applying a modulated signal for a white light gradation display having a length corresponding to the illumination light transition period.

Independent Claims 25 and 38 define a plurality of groups each having at least each of three boundary periods between red and green, green and blue, and blue and red, respectively of illumination periods of the three primary colors, of the plurality of groups, at least one group is supplied with a signal different from signals supplied to other

groups, and a same group is applied with a same signal during each of the three boundary periods between red and green, green and blue, and blue and red.

Independent Claims 26 and 39 define a plurality of groups each having at least each of three boundary periods between red and green, green and blue, and blue and red, respectively of illumination periods of the three primary colors, include a first group having a white light illumination period having a length corresponding to an illumination light transition period during each boundary period and a second group without the white light illumination period during each boundary period.

Thus, among its many features, the invention of the independent claims i) modulates light according to input display data, ii) has a white light illumination period per each interval between illumination periods for each light beam having different colors, and iii) time sequentially switches the generated light beams and illuminates the space modulation means with a light beam.

The applied art is not seen to disclose or to suggest the features of the invention. More particularly, the applied art is not seen to provide for image displaying which i) modulates light according to input display data, ii) has a white light illumination period per each interval between illumination periods for each light beam having different colors, and iii) time sequentially switches the generated light beams and illuminates the space modulation means with a light beam.

Bloom is seen to teach a color display system which uses modulators to generate images that can be viewed directly or projected onto a viewing screen. See Bloom, column 3, lines 26 to 32; Figure 27. As acknowledged in the Office Action, however, Bloom does not disclose i) utilizing a white light illumination period per each

interval between illumination periods for each light beam having different colors, and ii) time sequentially switching the generated light beams and illuminating the space modulation means with a light beam. Furthermore, Applicant asserts that Bloom is not seen to disclose or to suggest the newly clarified feature of modulating light according to input display data.

Yushiya is not seen to remedy the deficiencies of Bloom. In particular, Yushiya is not seen to disclose image displaying which i) modulates light according to input display data, ii) has a white light illumination period per each interval between illumination periods for each light beam having different colors, and iii) time sequentially switches the generated light beams and illuminates the space modulation means with a light beam.

Yushiya is seen to disclose an image reading system capable of high quality color image reading. See Yushiya, col. 3, lines 11 to 14. As disclosed in column 6, lines 48 to column 7, line 12 and Figures 1 and 2, a light 12 emerges from a light source 3, and is reflected by an original image to be read. The light reflects off of the original image to be read, and is reflected into a sensor array 1. There appears to be no motivation to combine Bloom and Yushiya, even assuming for the sake of argument that such a combination is permissible. While Bloom is seen to disclose a color display system, where an image is projected off a modulator for the purpose of viewing directly or from a viewing screen, Yushiya is seen to disclose a image reading system, where an original image is illuminated with a light from a light source, and a reflection is captured onto a sensor. Furthermore, in Yushiya, the object to be illuminated with light 12 emerging from light source 3 is the original image, and the reflected light 13 is not changed according to the input display data.

The Office Action cites col. 12, lines 39 to 44 and Figures 20 and 21 as evidence that Yushiya teaches an image reading operation in which the red, green and blue LEDs are turned on during their respective "turn-on" periods in order to obtain a desired output level. Applicant respectfully disagrees with this interpretation. To the contrary, Yushiya is seen to teach that the LEDs are respectively turned on *prior* to an actual image reading operation, not during image reading, to obtain the standard white board. Col. 12, line 39. Moreover, this pre-reading operation is not for illuminating the space modulation means, as asserted in the Office Action, rather it is to calibrate and compensate for fluctuations in the light intensity of the LED chips themselves, due to manufacturing variations. Col. 12, lines 13 to 17. In this regard, Yushiya is not seen to disclose image displaying which i) modulates light according to input display data, ii) has a white light illumination period per each interval between illumination periods for each light beam having different colors, and iii) time sequentially switches the generated light beams and illuminates the space modulation means with a light beam.

Accordingly, Yushiya either alone or in any permissible combination with Bloom, is not seen to disclose illuminating a modulator with incident light, as described in the present invention, where modulation of incident light is performed according to input display data.

Accordingly, based on the foregoing amendments and remarks, independent Claims 1, 4 to 6, 21, 24 to 26 and 32 to 39 are believed to be allowable over the applied references.

The other claims in the application are each dependent from the independent claim and are believed to be allowable over the applied references for at least the same

reasons. Because each dependent claim is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing amendment and remarks, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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